

Preliminary Evaluation of a Lightweight, Disposable Emergency Transport Ventilator in the Aeromedical Setting

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Introduction: Recent evidence suggests patients receiving pre-hospital ventilation benefit from the use of emergency transport ventilators (ETV). This evidence is supported by the fact manual ventilation using a bag-valve-mask type device has substantial variations in rate and volume. These variations occur during initial treatment and transport even by well-trained EMS crews. Proper tidal volume, airway pressures and respiratory rate are critical components of emergency ventilatory support and variations can impact mortality and morbidity on a wide range of patients suffering from illness or injury. **Methods:** The purpose of the evaluation was to determine the practicality and ease of use of a new ETV, the "RespirTech PRO" manufactured by Vortran Medical Technology 1, Inc. and identify any shortcomings during the initial phases of patient treatment, transport and emergency room care. The ETV was placed into service on our single BK 117-B2 hospital-based helicopter program. A Registered Nurse and Licensed Paramedic staff Air Med Team, which is based in Modesto, California. The majority of scene transports are flown to our base hospital, Doctors Medical Center also in Modesto, California. We gathered data on 12 patients from October 1999 to July 2000 that received ventilatory support from the ETV. Vitals signs during and post transport, arterial blood gases post transport and subjective data regarding ease of use, set-up and controls were gathered on all 12 patients. **Results:** Twelve patients received on-scene and in-flight ventilatory support from the ETV without complications. All 12 adult patients were intubated by ground EMS personnel or the Air Med Team and placed on the ETV. The two manual settings, pressure and rate were set without difficulty and facilitated by the use of continuous end-tidal CO₂ monitoring. The oxygen source for the ventilator was a 15-25 liter per minute fitting that allowed operation without difficulty in all 12 cases. Blood gas analysis and review of vital signs during and post transport indicated all patients had been adequately ventilated during initial treatment and transport. **Conclusion:** The RespirTech PRO proved to be an easy-to-use and reliable ETV that lends itself to a range of patients requiring prehospital ventilation. Ventilation is a key factor in the outcome of many types of injury and illness and this ETV should be considered for on-scene or transport use in a variety of prehospital settings.

Note: RespirTechPro was the original name of the product. The product was renamed and is now marketed by Hartwell Medical Corp., Carlsbad, California as the SUREVENT. SUREVENT is a trademark of Hartwell Medical.